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| 09/658,501 | 09/08/2000 | Yasuhiko Kojima | PM 273851 EL00018CDC | 3068 |

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PILLSBURY WINTHROP, LLP
P.O. BOX 10500
MCLEAN, VA 22102

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| EXAMINER |
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MOORE, KARLA A

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| ART UNIT | PAPER NUMBER |
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1763

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DATE MAILED: 10/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/658,501

Applicant(s)

KOJIMA ET AL.

Examiner

Karla Moore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

3. Applicant's amendment to claim 1 now recites "valve body located in the liquid storing chamber". Examiner fails to find support for that amendment in the specification or figures originally as filed. The valve body is clearly pictured in Figure 4 as an outside boundary of the shallow recess/liquid storing chamber (78 or 62), further in the specification (pages 11 and 12), the shallow recess/liquid storing chamber is described as being in the vaporizer body (74) with the valve body acting to sealingly separate the vaporizer body and the recess (82) in the support member. No mention is made of the valve body being "in" the liquid storing chamber. Accordingly, Examiner has interpreted the pending claims based on the invention as disclosed in the original specification and the drawings filed therewith.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

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The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1-5 and 8-12 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,440,887 to Nishizato et al.

6. Nishizato et al. disclose a semiconductor manufacturing system in Figure 1A comprising a process apparatus (50) for performing a process using a vaporized material and a vaporizer (40) which vaporizes a liquid material (column 3, rows 46-51).

7. The vaporizer (Figures 2,3 &4) of Nishizato et al. comprises: a liquid storing chamber (23), a vaporizing chamber (12), a small aperture (23a) connecting the liquid storing chamber and vaporizing chamber, a valve body (7a) and an actuator (not numbered, column 5, rows 15-20), a carrier gas introducing means (14) which injects the carrier gas in the vicinity of the outlet port of the small aperture in a direction perpendicular to the liquid discharge and heaters (42) provided in the periphery of the vapor chamber and near the liquid storing chamber. A thermocouple (41) is also provided for detecting temperature.

8. With respect to claim 5, Figure 5 shows the exit directions of discharge of liquid material from the small aperture using five (5) arrows. The leftmost arrow is in a direction substantially opposite to the carrier gas injecting port, so that the carrier gas is injected in a direction substantially opposite to a direction of liquid discharge.

9. With respect to claim 8, Figure 5 shows the exit direction of discharge of the liquid material from the small aperture as mentioned above. The rightmost arrow coincides with a direction of an exit of the vaporizing chamber.

10. With respect to claim 11, the additional limitations are related solely to a process material for an intended use.

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Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining the patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969).

11. Claims 1-6, 8-9 and 11-12 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,224,681.

12. Sivaramakrishnan et al. disclose a vaporizer (12), in Figure 2d, which vaporizes a liquid material under a depressurized atmosphere, the vaporizer comprising: a liquid storing chamber (48) temporarily storing the liquid material therein; a vaporizing chamber (50) set in the depressurized atmosphere; a small aperture (49) connecting between the liquid storing chamber and the vaporizing chamber so as to supply the liquid material to the vaporizing chamber; a valve body (46) which opens and closes an inlet port of the liquid storing chamber; and an actuator (column 3, rows 64-66) controlling a degree of opening of the valve body.

13. With respect to claims 2-5 and 8, the vaporizer further comprises a carrier gas introducing means (Figure 2b, 36) for introducing a carrier gas into the vaporizing chamber. The carrier gas introducing means injects the carrier gas in the vicinity of the outlet port of the small aperture and in a direction substantially perpendicular to a direction of discharge of the liquid material from the small aperture as well as a direction substantially opposite to a direction of discharge of the liquid material from the small aperture (see Figure 2c, column 4, rows 56-58). Further, a direction of discharge of the liquid material from and outlet port of the small aperture coincides with a direction of exit of the vaporizing chamber (also shown in Figure 2c).

14. With respect to claim 6, the valve body shown in Figure 2d is formed of bellows. Sivaramakrishnan et al. further teach that the valve body may alternatively be formed using a diaphragm (45; column 3, row 65 – column 4, row 6).

15. Note: Examiner has interpreted the language of claim to mean that the valve body comprises a diaphragm OR a bellows. This interpretation is based on the specification (page 19, rows 8-12) and Figure 9 of the application, where a valve body comprising bellows is shown and described and where a diaphragm is mentioned in the alternative and absent from the accompanying figure of the valve body which comprises bellows.

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16. With respect to claim 9, Sivaramakrishnan et al. further teach the vaporizer comprising a heater provided in the periphery of the vaporizing chamber and a temperature sensor for detecting a temperature of the periphery of the vaporizing chamber (column 5, rows 31-35 and column 6, rows 24-25).

17. With respect to claim 11, the additional limitations are related solely to a process material for an intended use.

Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining the patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969).

18. With respect to claim 12, Sivaramakrishnan et al. further teach use of the vaporizer in a semiconductor manufacturing system further comprising a processing apparatus (Figure 1, 18) using a vaporized material.

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishizato et al. as applied to claims 1-5 and 8-12 above in view of U.S. Patent No. 5,630,878 to Yuuki et al.

21. Nishizato et al. disclose a semiconductor manufacturing system comprising a vaporizer as described above.

22. However, Nishizato et al. fail to disclose a conical shaped vaporizing chamber.

23. Yuuki et al. teach the use of a conical shaped vaporization chamber (Figure 7, 4; column 15, rows 10-16) for the purpose of quickly and effectively vaporizing particles supplied to the vaporizer so that liquid material does not stagnate in the piping.

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24. It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to have provided a conical shaped vaporizing chamber in Nishizato et al. for quick and effective vaporization as taught by Yuuki et al.

25. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sivaramakrishnan et al. as applied to claims 1-6, 8-9 and 12 above in view of U.S. Patent No. 5,630,878 to Yuuki et al.

26. Sivaramakrishnan et al. disclose a semiconductor manufacturing system comprising a vaporizer as described above.

27. However, Sivaramakrishnan et al. fail to disclose a conical shaped vaporizing chamber.

28. Yuuki et al. teach the use of a conical shaped vaporization chamber (Figure 7, 4; column 15, rows 10-16) for the purpose of quickly and effectively vaporizing particles supplied to the vaporizer so that liquid material does not stagnate in the piping.

29. It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to have provided a conical shaped vaporizing chamber in Sivaramakrishnan et al. for quick and effective vaporization as taught by Yuuki et al.

Response to Arguments

30. Applicant's arguments filed 7/02/02 with respect to Nishizato et al. and claims 1-5 and 8-12 have been fully considered but they are not persuasive.

31. With respect to Applicant's argument that the valve body (7a) of Nishizato et al. does not correspond to Applicant's valve body (70), the valve body of Nishizato et al. meets the claim limitations as set forth in Applicant's amended and original claim 1. The valve body (7a) is part of the vaporizer and functions to open and close an inlet port of the liquid storing chamber on a side of the liquid storing chamber (column 5, rows 15-20). Admittedly, the prior art does not explicitly state that the valve body serves to **completely open and close** and inlet opening of the small aperture; however, neither do Applicant's claims.

32. With respect to the Applicant's amendment drawn to the valve body being located in the liquid storing chamber, Examiner fails to find support for that amendment in the specification or figures.

Amendment has been handled as noted in paragraph 3 of the current action.

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33. With respect to Applicant's arguments with respect to claim 8 and the direction of discharge of the liquid material, Examiner points out that the claim reads that the **a direction** of discharge of the liquid material from an outlet port of the small aperture coincides with **a direction** of an exit of the vaporizing chamber. Several arrows are shown in Figure 5, the rightmost arrow shows a liquid discharge direction (to the right) coinciding with a direction of an exit of the vaporizing chamber (to the right).

34. Applicant's arguments filed 7/02/02 with respect to Miyamoto et al. and claims 1,6 and 9-12 have been fully considered and the corresponding rejections have been withdrawn.

35. Applicant's arguments with respect to claim 7 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

36. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

37. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 703.305.3142. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703.308.1633. The fax phone numbers for the organization where this

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application or proceeding is assigned are 703.872.9310 for regular communications and 703.872.9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

km
October 20, 2002


GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700